

REMARKS

This Amendment is in response to the Office Action of April 19, 2005. Applicants respectfully submit that all the claims presently on file are in condition for allowance or appeal.

THE SPECIFICATION

The disclosure was objected to because of a certain informality. This informality has now been corrected in compliance with 35 USC 112.

THE CLAIMS

REJECTION UNDER 35 USC 112, FIRST PARAGRAPH

Claims 1-10, 13-20, and 25-30 were rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement, reasoning that:

"[T]he claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding independent claim 13, the amended limitations "typing at least some initial characters of a logographic based text", "a user's eye natural looking position" and "without requiring deliberate staring at the preselected one or more candidate characters", introduce new subject matter(s), since the limitations did not specifically described in the original specification."

Applicants respectfully traverse this rejection on the ground that the three features/limitations which were objected to by the Examiner are in fact

described and supported in the specification. More specifically, the first feature: "typing at least some initial characters of a logographic based text" is described in the specification, for example, at page 19, lines 10 - 13, as follows:

"At step 300 of FIG. 10, and with reference to FIG. 6, the user now types the pinyin "zhe" that appears in the input tracking bar 200, and five possible candidate characters 250, 251, 252, 253, 254 are concurrently displayed in the gaze-tracking panel 230 (step 305)."

Both the second feature: "a user's eye natural looking position;" and the third feature: "without requiring deliberate staring at the preselected one or more candidate characters," are described in the specification, for example, at page 6, lines 18 - 23, as follows:

"In addition, allowing the user to simply look at the appropriate character then press a confirmation key provides the natural use of the eye for selecting the character. In contrast to standard eye-tracking technology, the user is not required to stare at the character for a predetermined amount of time or blink to select the character, and the gaze tracking need not be activated all the time during input."

In addition, the Examiner indicates that: "the limitation "typing at least some initial characters of a logographic based text" also introduces enablement problem, since the specification does not disclose how to typing a character of a logographic based text. As best understand in light of the specification (see Figs. 3-8, block 200), this limitation will be interpreted as "typing at least some initial PinYin characters representing a logographic based text" hereinafter." Applicants have now amended the claims in compliance with the Examiner's remark, in order to add further clarity to the claims.

To conclude, claims 1-10, 13-20, and 25-30, as amended, satisfy 35 U.S.C. 112, first paragraph.

CLAIMS REJECTION UNDER 35 U.S.C. 103

Claims 1-7, 9-10, 13-20, and 25-30 were rejected under 35 U.S.C. 103(a) as being unpatentable over Forest et al. (US 5,999,895) hereinafter referenced as Forest in view of Chen (US 6,014,615), and further in view of van Cruyningen (US 5,805,167) hereinafter referenced as Cruyningen.

Applicants respectfully traverse this rejection and submit that the claims as amended, are not obvious in view of the cited references, and are thus patentable thereover. In support of this position, Applicants submit the following arguments.

A. Legal Standard for Obviousness

The following legal authorities set the general legal standards in support of Applicant's position of non obviousness, with emphasis added for added clarity:

- MPEP 706.02(j), **"To establish a prima facie case of obviousness, three basic criteria must be met.** First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, **the prior art reference (or references when combined) must teach or suggest all the claim limitations.** The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) ... The initial burden is on the

examiner to provide some **suggestion of the desirability** of doing what the inventor has done. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the **references must expressly or impliedly suggest the claimed invention** or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." Ex parte Clapp, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985)."

- **In determining the differences between the prior art and the claims, the question under 35 U.S.C. 103 is** not whether the differences themselves would have been obvious, but **whether the claimed invention as a whole would have been obvious**. The prior art perceived a need for mechanisms to dampen resonance, whereas the inventor eliminated the need for dampening via the one-piece gapless support structure. "Because that insight was contrary to the understandings and expectations of the art, the structure effectuating it would not have been obvious to those skilled in the art." 713 F.2d at 785, 218 USPQ at 700 (citations omitted).
- MPEP §2143.03, "All Claim Limitations Must Be Taught or Suggested: To establish prima facie obviousness of a claimed invention, **all the claim limitations must be taught or suggested by the prior art**. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). **All words in a claim must be considered** in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)."
- MPEP §2143.01, "The Prior Art Must Suggest The Desirability Of The Claimed Invention: There are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art." In re Rouffet, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998) (**The combination of the references taught every element of the claimed invention, however without a motivation to combine, a rejection based on a prima facie case of obvious was held improper.**). The level of skill in the art cannot be relied upon to provide the suggestion to

combine references. *Al-Site Corp. v. VSI Int'l Inc.*, 174 F.3d 1308, 50 USPQ2d 1161 (Fed. Cir. 1999).

- "**Obviousness cannot be established** by combining the teachings of the prior art to produce the claimed invention, **absent some teaching or suggestion** supporting the combination." *In re Fine*, 837 F.2d at 1075, 5 USPQ2d at 1598 (citing *ACS Hosp. Sys. v. Montefiore Hosp.*, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984)). **What a reference teaches** and whether it teaches toward or **away from the claimed invention** are questions of fact. See *Raytheon Co. v. Roper Corp.*, 724 F.2d 951, 960-61, 220 USPQ 592, 599-600 (Fed. Cir. 1983), cert. denied, 469 U.S. 835, 83 L. Ed. 2d 69, 105 S. Ct. 127 (1984). "
- "When a rejection depends on a combination of prior art references, there must be **some teaching, suggestion, or motivation** to combine the references. See *In re Geiger*, 815 F.2d 686, 688, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987)." **Obviousness can only be established by combining or modifying** the teachings of the prior art to produce the claimed invention **where there is some teaching, suggestion, or motivation** to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See MPEP 2143.01; *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).
- "With respect to core factual findings in a determination of patentability, however, the **Board cannot simply reach conclusions based on its own understanding or experience** -- or on its assessment of what would be basic knowledge or common sense. **Rather, the Board must point to some concrete evidence in the record** in support of these findings." See *In re Zurko*, 258 F.3d 1379 (Fed. Cir. 2001).
- "We have noted that **evidence of a suggestion, teaching, or motivation to combine** may flow from the prior art references themselves, the knowledge of one of ordinary skill in the art, or, in some cases, from the nature of the problem to be solved, see *Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573, 37 USPQ2d 1626, 1630 (Fed. Cir. 1996), *Para-Ordinance Mfg. v. SGS Imports Intern., Inc.*, 73 F.3d 1085, 1088, 37 USPQ2d 1237, 1240 (Fed. Cir. 1995), although "the suggestion more often comes from the teachings of the pertinent references," *Rouffet*, 149

F.3d at 1355, 47 USPQ2d at 1456. The range of sources available, however, does not diminish the requirement for actual evidence. That is, **the showing must be clear and particular**. See, e.g., C.R. Bard, 157 F.3d at 1352, 48 USPQ2d at 1232. **Broad conclusory statements regarding the teaching of multiple references, standing alone, are not "evidence."** E.g., McElmurry v. Arkansas Power & Light Co., 995 F.2d 1576, 1578, 27 USPQ2d 1129, 1131 (Fed. Cir. 1993) ("Mere denials and conclusory statements, however, are not sufficient to establish a genuine issue of material fact."); In re Sichert, 566 F.2d 1154, 1164, 196 USPQ 209, 217 (CCPA 1977). See In re Dembiczak, 175 F. 3d 994 (Fed. Cir. 1999).

- "To prevent the use of hindsight based on the invention to defeat patentability of the invention, **this court requires the examiner to show a motivation to combine the references** that create the case of obviousness. In other words, **the examiner must show reasons** that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references **for combination in the manner claimed**." See In re Rouffet, 149, F.3d 1350 (Fed. Cir. 1998).
- The mere fact that references can be combined or modified does not render the resultant combination obvious **unless the prior art also suggests the desirability of the combination**. In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Although a prior art device "may be capable of being modified to run the way the apparatus is claimed, **there must be a suggestion or motivation in the reference** to do so." 916 F.2d at 682, 16 USPQ2d at 1432.). See also In re Fritch, 972 F.2d 1260, 23 USPQ2d 1780 (Fed. Cir. 1992) (flexible landscape edging device which is conformable to a ground surface of varying slope not suggested by combination of prior art references).
- If the **proposed modification would render the prior art invention being modified unsatisfactory** for its intended purpose, **then there is no suggestion or motivation** to make the proposed modification. In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

B. Brief Summary of the Present Invention

Prior to presenting substantive arguments in response to the obviousness rejection, it might be desirable to review the present invention in view of the three important concepts, which apparently were not clear to the Examiner, and further in view of the problems addressed by the present invention.

The complication to Chinese pinyin input is that most Chinese characters are homophonic on a wide scale. When a user types the pinyin of a character, such as "zhong", the computer software for Chinese text input displays many candidate characters with the same pronunciation, numbered for selection purposes. The display is typically a "page", usually a one-line graphical window. The first eight candidate characters for "zhong" could be

1中 2种 3重 4众 5种 6终 7忠 8肿

having the following meanings:

1.center; 2. type; 3. heavy; 4. mass; 5. kind; 6. finale; 7. loyal; and 8. swollen, respectively.

The user must then select a choice from the candidate list by typing the identifying number, e.g., the number "1" for the character corresponding to "center". If more than eight characters correspond to a pinyin word, pressing the "page down" key displays additional candidates also numbered 1 to 8 which may be selected as before.

This multiple choice selection process renders current pinyin input much less efficient than typing in alpha-based languages. A major source of this

inefficiency is the difficulty of touch-typing a numeric key to select the target character. On a standard "QWERTY" keyboard typing the numeric keys may be much more difficult than typing the alphabetic keys. This is due in part to the distance between the numeric keys and the "home row" where the hand naturally rests during typing, i.e., the ASDFGHJKL keys.

In addition, many if not most typists have to look at and then type the numeric keys. If the character candidates for the pinyin word exceed one "page", the typist must also "page down" to view additional candidates, consuming additional time. Consequently, the two important advantages of touch-typing, speed and the low demand for visual attention, both suffer when Chinese input is required. A text entry system for Chinese input that avoids numeric keying and thus maintains the user's touch-typing ability is a compelling goal in Chinese text input.

Another source of inefficiency in Chinese language text entry is the choice reaction time, i.e., the time required to choose the correct character from the list presented by the text entry software program. Numerous methods have been proposed to reduce the frequency and number of choices in pinyin-based input.

Conventional eye-tracking technology uses the eye gaze as a direct control channel to move a cursor on the screen, or to assist in entering text. However, there are two deficiencies in using eye-tracking technology for direct control. First, eye gaze cannot be very precise given the one-degree size of the fovea and the subconscious jittery motions that the eyes constantly produce. Second, the eye is not naturally suited for deliberate

control functions. At times, eye movement is voluntary while at other times the eye moves involuntarily in response to external events. Current eye-tracking systems cannot easily distinguish deliberate eye movement from accidental eye movement.

To use eye-tracking technology in text entry of Chinese characters, a system is needed which allows the natural look of the eye to select the desired Chinese graphic without requiring long-term deliberate control of the eye movement. This system (1) uses the natural movement of the eye to highlight the Chinese character (2) while the user presses a key to select that character for entry; this is referred to as multiplexing or combining the inputs.

C. Application of the Obviousness Standard to the Present Invention

Considering now the obviousness rejection in view of the representative claim 13, the system recited in claim 13 comprises an eye-tracking apparatus that monitors the user's eye natural looking position. This is in comparison to what is misunderstood as a "gaze tracking" apparatus that (a) requires the user to stare at the characters for a period of time; and (b) that acts as a control mechanism. Reference is made to the Summary of the Invention above that provides additional details about the distinction between the conventional gaze tracking apparatus and the present eye-tracking apparatus.

According to the present invention, the selection process is a two-step technique, according to which: (1) the eye-tracking apparatus tracks the eye's natural looking position without requiring deliberate staring at the

preselected one or more candidate characters; and (2) once the candidate character(s) is(are) selected, then the input command confirms the selection.

More specifically, and with respect to an exemplary Chinese text input, the characters are imputed via an input device, such as a keyboard. Eye-tracking information is used implicitly at the Chinese character candidate selection stage to remove the additional efforts of searching and hitting numeric selection keys (please refer to the example above). As a result, a 2-D high-accuracy gaze tracking is not required by the present invention.

This is clearly a departure from Forest that describes the conventional eye-gazing method, and that does not require "dwell time" to confirm the input command. The dwell time (or stare time) is clearly distinguished over by claim 13. In particular, the present invention, as represented by claim 13, recites tracking the user's eye natural looking position is implemented **without requiring deliberate staring at the preselected one or more candidate characters, in order to select a target character.** Consequently, Forest and the combination of Forest, Chen, and Cruyningen teach away from the present invention.

In response to Applicants' arguments regarding the "dwell time" in the prior art, **the Examiner notes that: "the major role of "dwell time" is to give a time period to allow system reliably identify at least one eye-scanned region/item,** but not always to "confirm" an action for an identified region/item. In fact, no matter to confirm an action or not, processing an eye-scanned region/item always requires certain "dwell time" for stabilizing

the eye-focused region/item, otherwise, the processing cannot reliably identify any useful region/item." Emphasis added.

Applicants respectfully traverse the Examiner's ground of rejection and submit that the Examiner is not allowed to redefine terms that are already pre-defined by Applicants. More specifically, at page 6, lines 18 - 23 of the application, Applicants expressly distinguish the user's natural looking position relative to the conventional eye-tracking technology that uses "dwell time" as in Forest, as follows:

"In addition, allowing the user to **simply look** at the appropriate character then press a confirmation key **provides the natural use of the eye** for selecting the character. **In contrast to standard eye-tracking technology, the user is not required to stare at the character** for a predetermined amount of time or blink to select the character, and the gaze tracking need not be activated all the time during input." Emphasis added.

As a result, the user's natural looking position is clearly distinguishable from the dwell time concept and the Examiner is not permitted to reinterpret this concept, particularly that **the present invention teaches away from the dwell time concept.**

Furthermore, the Examiner admits that: **"the major role of "dwell time" is to give a time period to allow system reliably identify at least one eye-scanned region/item"**. The Examiner's explanation confirms that "dwell time" is a delay period, in other terms a delay period over and above the user's natural looking position. This explanation clearly defeats the teaching of the present invention that aims at using the user's natural looking position without dwelling or unnatural delay period.

In addition, according to the Examiner's explanation, dwell time is used to reliably identify the region/item. However, contrary to the Examiner's explanation, the present invention does not require a reliable identification of the region/item. All that is required by the present system is that: "based on the user's eye natural looking position, pre-selecting one or more candidate logographic characters, without requiring deliberate staring at the pre-selected one or more candidate logographic characters, in order to select the target logographic character". In other term, the pre-selection step of the present invention does not need to reliably identify the region/item. It is the second step of selection (or second input) that reliably identifies the desired selection.

Moreover, according to the legal authorities above, the Examiner is required to consider the invention as a whole. Applicants respectfully submit that, by not giving due weight to the distinctive two-step process of the present invention, the Examiner is not considering the invention as a whole, but is rather focusing on details that have already been addressed and resolved in the specification, and thus do not need to be reconsidered.

Similarly, independent claims 1 and 25 are not obvious in view of the cited references, for containing generally comparable elements and limitations to those of claim 13. As a result, the independent claims 1, 13, and 25 and the claims dependent thereon are allowable over the cited references of record, whether taken individually or in combination with each other.

CONCLUSION

All the claims presently on file in the present application are in condition for immediate allowance, and such action is respectfully requested. If it is felt for any reason that direct communication would serve to advance prosecution of this case to finality, the Examiner is invited to call the undersigned at the below-listed telephone number.

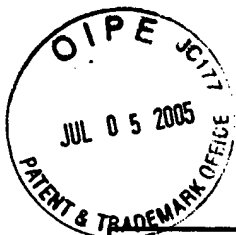
Respectfully submitted,

Date: July 5, 2005

Samuel A. Kassatly Law Office
20690 View Oaks Way
San Jose, CA 95120
Tel: (408) 323-5111
Fax: (408) 521-0111



Samuel A. Kassatly
Attorney for Applicants
Reg. No. 32,247



Attorney Docket No.: ARC920000134US1

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